

VERMONT 2005 GUIDELINES FOR ENERGY EFFICIENT COMMERCIAL CONSTRUCTION CODE COMPLIANCE WORKSHEETS

BUILDING ENVELOPE WORKSHEET

Project Description

Site Address (street, town, ZIP Code)

CBES Standard Used

☐

2005 VT Guidelines For Energy Efficient Commercial Construction

☐

ASHRAE Standard 90.1-2004

BUILDING ENVELOPE

Foundation Type:

Below-Grade Walls - Type & R-value:

Slab-on-Grade - Type & R-value:

Floors over Unconditioned Spaces - Type & R-value:

Roof - Type & R-value:

Above-Grade Walls - Type & R-value:

Windows - Type & U-value:

Windows - SHGC:

Window to Wall Ratio (%):

Skylights - Type & U-value:

Skylights - SHGC:

Skylight to Roof Ratio (%):

Opaque Swinging Doors - U-value:

Note: Use of entire assembly U-values, area weighted average U, R, or SHGC values are acceptable

ADDITIONAL BUILDING ENVELOPE ENERGY FEATURES OR COMMENTS

VERMONT 2005 GUIDELINES FOR ENERGY EFFICIENT COMMERCIAL CONSTRUCTION CODE COMPLIANCE WORKSHEETS

ENVELOPE WORKSHEET INSTRUCTIONS

- Fill in **Project Description**
- Fill in **Site Address**
- Select **CBES Standard Used**
- Enter **Foundation Type** – (e.g. Slab on Grade or Poured Concrete)
- Enter **Below-Grade Walls – Type & R-value** – (e.g. Poured Concrete with R-10 ci rigid foam board, or N/A)
- Enter **Slab-on-Grade – Type & R-value** – (e.g. unheated with R-10 perimeter for 48 inches, rigid foam board)
- Enter **Floors over Unconditioned Spaces – Type & R-value** – (e.g. Wood framed with R-30 fiberglass batts, or N/A)
- Enter **Roof – Type & R-value** – (e.g. Wood framed with R-38 fiberglass batts, or R-24 ci rigid foam board entirely above deck)
- Enter **Above-Grade Walls – Type & R-value** – (e.g. Wood framed with R-21 fiberglass batts or Metal framed with R-13 fiberglass batts and R-7.5 ci rigid foam board)
- Enter **Windows Type & U-value** – (e.g. Wood framed with U-.35)
 - Note: U-value can be entered separately per window, grouped per same U-value, or weighted average U-value
 - Includes doors with 50 % or greater glass area
- Enter **Windows SHGC** – (e.g. .40)
 - Note: SHGC can be entered separately per window, grouped per same SHGC, or weighted average SHGC
 - If SHGC is greater than .40, enter Projection Factor (e.g. .PF > 0.5)
- Enter **Window to Wall Ratio (%)** – (e.g. 18%)
- Enter **Skylights Type & U-value** – (e.g. Glass with U-.60)
 - Note: U-value can be entered separately per skylight, grouped per same U-value, or weighted average U-value

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ENVELOPE WORKSHEET INSTRUCTIONS

- Enter **Skylight SHGC** – (e.g. .40)
 - Note: SHGC can be entered separately per skylight, grouped per same SHGC, or weighted average SHGC
- Enter **Skylight to Roof Ratio (%)** – (e.g. 3%)
- Enter **Opaque Swinging Doors U-value** – (e.g. U-.45)
 - Note: U-value can be entered separately per door, grouped per same U-value, or weighted average U-value
 - Opaque doors are doors having less than 50% glass area
- Enter **Additional Building Envelope Energy Features or Comments** – (e.g. 1 roll up door with R-10)
- Completed worksheets shall be sent in with the CBES Affidavit as part of supporting documentation

Note: Use of entire assembly U-values, area weighted average U, R, or SHGC values are acceptable

Note: SHGC = Solar Heat Gain Coefficient

Note: Window to Wall Ratio formula = Total Window Area (ft²) divided by Gross Above-Grade Wall Area (ft²)

For window area, use window rough opening

Note: Skylight to Roof Ratio formula = Total Skylight Area (ft²) divided by Gross Roof Area (ft²)

For skylight area, use skylight rough opening

VERMONT 2005 GUIDELINES FOR ENERGY EFFICIENT COMMERCIAL CONSTRUCTION CODE COMPLIANCE WORKSHEETS

MECHANICAL SYSTEMS WORKSHEET

Project Description

Site Address (street, town, ZIP Code)

CBES Standard Used

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2005 VT Guidelines For Energy Efficient Commercial Construction

☐

ASHRAE Standard 90.1-2004

MECHANICAL SYSTEMS

Space Heating Fuel:

Space Heating System:

Space Heating Size:

Space Heating System Efficiency:

Air Conditioning System:

Air Conditioning Size:

Air Conditioning Efficiency:

Water Heating Fuel:

Water Heating System:

Water Heating System Size:

Water Heating System Efficiency:

Ventilation System:

ADDITIONAL MECHANICAL SYSTEMS ENERGY FEATURES OR COMMENTS

VERMONT 2005 GUIDELINES FOR ENERGY EFFICIENT COMMERCIAL CONSTRUCTION CODE COMPLIANCE WORKSHEETS

MECHANICAL WORKSHEET INSTRUCTIONS

- Fill in **Project Description**
- Fill in **Site Address**
- Select **CBES Standard Used**
- Enter **Space Heating Fuel** – (e.g. natural gas or fuel oil)
- Enter **Space Heating System** – (e.g. hot air furnace, or hot water boiler with fan coils)
- Enter **Space Heating System Size** – (e.g. 250,000 btu/hr)
- Enter **Space Heating System Efficiency** – (e.g. 90% thermal efficiency or 88% AFUE)
- Enter **Air Conditioning System** – (e.g. split system, air cooled or chiller, air cooled)
- Enter **Air Conditioning Size** – (e.g. 135,000 btu/hr)
- Enter **Air Conditioning Efficiency** – (e.g. 11 EER, or 13 SEER)
- Enter **Water Heating Fuel** – (e.g. natural gas, fuel oil, or electric)
- Enter **Water Heating System** – (e.g. Fuel Fired Storage Unit, or instantaneous)
- Enter **Water Heating System Size** – (e.g. 80 gallons storage, 165,000 btu/hr, or 5 kw)
- Enter **Water Heating System Efficiency** – (e.g. 84% thermal efficiency or .95 EF)
- Enter **Ventilation System** – (e.g. mechanical, natural, demand controlled, heat recovery)
- Enter **Additional Mechanical System Energy Features or Comments** – (e.g. set back thermostats, or DDC)
- Completed worksheets shall be sent in with the CBES Affidavit as part of supporting documentation

INTERIOR LIGHTING POWER DENSITY WORKSHEETS

Site Address (street, town, ZIP Code)

☐ ASHRAE Standard 90.1-2004

☐ **Building Area Method** – *(Complete Building Area Method Section)*

☐ **Space-by-Space Method** – *(Complete Space-by-Space Method Section)*

Lighting Power Density is in Compliance if the Total Interior Connected Lighting Power (W) is less than or equal to the Total Interior Lighting Power Allowance (W)

Space-by-Space Method Section

Interior Lighting Power Allowance (Space-by-Space Method)

Building Type	Space Type	LPD (W/ft²)	Space Area (ft²)	Lighting Power Allowance (W)
Total Interior Lighting Power Allowance (W)				

Interior Connected Lighting Power (Space-by-Space Method)

[illegible]

Lighting Power Density is in Compliance if the Total Interior Connected Lighting Power (W) is less than or equal to the Total Interior Lighting Power Allowance (W)

Space-by-Space Method Section

Additional Interior Lighting Power Allowance (Optional)

The Additional Interior Lighting Power Allowance is an optional section of the Space-by-Space LPD Method to be used only for specific purposes, such as decorative lighting or retail display lighting. The Additional Interior Lighting Power Allowance can only be used for its intended purpose and cannot be traded off to be used for general interior lighting power allowance.

Additional Interior Lighting Power Allowance (Space-by-Space Method)

Space or Display	Type	Area (ft ²)	Unit Allowance (W/ft ²)	Allowance (W)	Installed Power (W)

Additional Interior Connected Lighting Power (Space-by-Space Method)

Space or Display	Luminaire Description	# of Luminaires	Watts Per Luminaire	Total Watts

Additional Lighting Power Density is in Compliance if the Installed Power (W) is less than or equal to the Allowance (W) for each space or display the additional interior lighting power allowance is used for.

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INTERIOR LIGHTING POWER DENSITY WORKSHEET INSTRUCTIONS

- Fill in **Project Description**
- Fill in **Site Address**
- Select **LPD method used**
 - Options are Building Area Method or Space-by-Space Method
 - If the Building Area Method is selected complete the Building Area Method section only
 - If the Space-by-Space Method is selected complete the Space-by-Space Method only. Note: the Additional Lighting Power Allowance section included in the Space-by-Space section is an optional section and only needs to be completed if that option was used in the lighting design.
- Select **CBES Standard used**
- If the Building Area Method is selected
 - Complete **Interior Lighting Power Allowance (Building Area Method)** section
 - Complete **Interior Connected Lighting Power (Building Area Method)** section
- If the Space-by-Space Method is selected
 - Complete **Interior Lighting Power Allowance (Space-by-Space Method)** section
 - Complete **Interior Connected Lighting Power (Space-by-Space Method)** section
- If the Space-by-Space Method is selected and the optional Additional Lighting Power Allowance is used
 - Complete **Interior Lighting Power Allowance (Space-by-Space Method)** section
 - Complete **Interior Connected Lighting Power (Space-by-Space Method)** section
 - Complete **Additional Interior Lighting Power Allowance (Space-by-Space Method)** section
 - Complete **Additional Interior Connected Lighting Power (Space-by-Space Method)** section
- Completed worksheets shall be sent in with the CBES Affidavit as part of supporting documentation